

WHAT IS CLAIMED IS:

1. A disk drive comprising:

a head having a giant magnetoresistive (GMR)  
read element which reads data from a disk medium and  
5 a write element which writes data to the disk medium;  
an actuator mechanism on which the head is  
mounted and which moves to a specified position on the  
disk medium;

current supply units which supply a bias current  
10 and a write current to the GMR read element and the  
write element, respectively; and

a control unit which determines, on the basis of  
a resistance value of the GMR read element, an optimum  
bias and write currents required to successfully  
15 execute pinning reset on the GMR read element and  
which allows the optimum bias and write currents to be  
supplied to the head.

2. The disk drive according to claim 1, wherein  
the control unit includes a memory which stores a  
20 resistance value, a temperature coefficient, a bias  
current value, and a write current value of the GMR  
read element in association with one another, and

when the bias current and the write current are  
supplied, the resistance value of the GMR read element  
25 is measured, and the optimum bias and write currents  
required to produce the pinning reset effect are  
determined on the basis of the relationship with

the resistance value.

3. The disk drive according to claim 1, wherein the control unit includes a memory which stores a resistance value, a temperature coefficient, a bias  
5 current value, and a write current value of the GMR read element in association with one another, and

when the bias current and the write current are supplied, the resistance value of the GMR read element is measured, a temperature value of the GMR read  
10 element is calculated, and the optimum bias and write currents required to produce the pinning reset effect are determined on the basis of the relationship with the temperature value.

4. The disk drive according to claim 1, wherein  
15 when a read error occurs during a read operation of reading data from the disk medium, the control unit causes the actuator mechanism to move the head to a specified position on the disk medium or outside the range of the disk medium and then causes the current  
20 supply units to supply the optimum bias and write currents to the head.

5. The disk drive according to claim 1, wherein  
when a read error occurs during a read operation of reading data from the disk medium, if recovery  
25 from the read error fails even though a read retry operation is performed, the control unit causes the actuator mechanism to move the head to a specified

position on the disk medium or outside the range of the disk medium and then causes the current supply units to supply the optimum bias and write currents to the head.

5           6. The disk drive according to claim 4, wherein the control unit causes the optimum bias and write currents to be supplied to the head, and if recovery from the read error fails, changes the bias current value to reperform a read operation.

10           7. The disk drive according to claim 5, wherein the control unit causes the optimum bias and write currents to be supplied to the head, and if recovery from the read error fails, changes the bias current value to reperform a read operation.

15           8. A method of read error recovery in a disk drive including a disk medium and a head which has a GMR read element and a write element, the method comprising:

            using the GMR read element to perform a read  
20           operation of reading data from the disk medium and then determining whether or not a read error has occurred;

            when the read error occurs, moving the head to a specified position on the disk medium or outside  
25           the range of the disk medium; and

            determining an optimum bias and write currents required to successfully execute pinning reset of the

GMR read element on the basis of a resistance value of the GMR read element; and

supplying the optimum bias and write currents to the GMR read element and the write element,  
5 respectively.

9. The method according to claim 8, further comprising acquiring information on relationships between the resistance value and a bias current value and a write current value of the GMR read element from  
10 a memory storing this information,

wherein in the determination, when the bias current and the write current are supplied, the resistance value of the GMR read element is measured, and the optimum bias and write currents required to  
15 produce the pinning reset effect are determined on the basis of the resistance value and the information.

10. The method according to claim 8, further comprising acquiring information on relationships between the resistance value and a temperature  
20 coefficient and a bias current value and a write current value of the GMR read element from a memory storing this information; and

when the bias current and the write current are supplied, measuring the resistance value of the GMR  
25 read element, and calculating a temperature value of the GMR read element on the basis of the resistance value,

wherein in the determination, the optimum bias and write currents required to produce the pinning reset effect are determined on the basis of the calculated temperature value and the information.

5           11. A method according to claim 8, further comprising performing a predetermined read retry operation when the read error occurs,

              wherein the movement, the determination, and the supply are carried out when the read retry operation  
10           fails to achieve recovery from the read error.

              12. A method according to claim 8, further comprising changing the bias current value if recovery from the read error fails after the optimum bias and write currents have been supplied in the supply step;  
15           and

              reperforming a read operation on the basis of the changed bias current value.